

RESPONSE AND AMENDMENT
Serial No. 10/092,795
Page 1 of 7

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Applicant: Nallan et al.

Case: 7017/ETCH/CONE

Serial No.: 10/092,795

Filed: March 6, 2002

Examiner: Tuan H. Nguyen

Group Art Unit: 2813

Title: METHOD OF PLASMA ETCHING OF HIGH-K DIELECTRIC
MATERIALS WITH HIGH SELECTIVITY TO UNDERLYING LAYERS

COMMISSIONER FOR PATENTS
Box Non-Fee Amendment
Washington, DC 20231

RESPONSE AND AMENDMENT UNDER 37 C.F.R. §1.111

S I R:

In response to the Office Action dated November 6, 2002, please amend the
above-identified patent application as follows:

IN THE CLAIMS

Please rewrite claim 17 as follows:

FAX RECEIVED

FEB 05 2003

TECHNOLOGY CENTER 2800

Sub
B²
17. (Amended) A method for plasma etching a workpiece having a layer of hafnium-oxide comprising the steps of:
supplying between 20 to 300 sccm of chlorine and between 2 to 200 sccm of carbon monoxide;
maintaining a gas pressure of between 2-100 mTorr;
applying a bias power to a cathode electrode of between 5 to 100 W;
applying power to an inductively coupled antenna of between 200 to 2500 W to produce a plasma containing said chlorine gas and said carbon monoxide gas;

PTO/SB/21 (08-00)

Please type a plus sign (+) inside this box → ☒Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	10/092,795
	Filing Date	March 6, 2002
	First Named Inventor	Nallan, et al.
	Group Art Unit	2813
	Examiner Name	Tuan H. Nguyen
Total Number of Pages in This Submission	Attorney Docket Number	7017/ETCH/CONE

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition Routing Slip (PTO/SB/69) and Accompanying Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
Remarks 		

FAX RECEIVED

FEB 05 2003

TECHNOLOGY CENTER 2800

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Patricia A. Verlangieri, Esq. Moser, Patterson & Sheridan, LLP
Signature	<i>Patricia A. Verlangieri</i>
Date	February 5, 2003

Approved for use through 10/31/2002. OMB 0851-0032
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

Complete If Known

Application Number 10/092,785
Filing Date March 6, 2002
First Named Inventor Nallan, et al.
Examiner Name Tuan H. Nguyen
Group / Art Unit 2813
Attorney Docket No. 7017/ETCH/CONE

FAX RECEIVED

FEB 05 2003

TECHNOLOGY CENTER 2800

TOTAL AMOUNT OF PAYMENT (\$) 0

METHOD OF PAYMENT (check one)		FEE CALCULATION (continued)																																																																																																																																																																															
<p>1. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:</p> <p>Deposit Account Number 20-0782</p> <p>Deposit Account Name Moser, Patterson & Sheridan, LLP</p> <p><input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17</p> <p><input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27</p> <p>2. <input type="checkbox"/> Payment Enclosed:</p> <p><input type="checkbox"/> Check <input type="checkbox"/> Credit card <input type="checkbox"/> Money Order <input type="checkbox"/> Other</p>		<p>3. ADDITIONAL FEES</p> <table border="1"> <thead> <tr> <th>Fee Code</th> <th>Large Entity Fee (\$)</th> <th>Small Entity Fee Code</th> <th>Small Entity Fee (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>105</td><td>130</td><td>205</td><td>65</td><td>Surcharge - late filing fee or oath</td><td></td></tr> <tr><td>127</td><td>50</td><td>227</td><td>25</td><td>Surcharge - late provisional filing fee or cover sheet</td><td></td></tr> <tr><td>139</td><td>130</td><td>139</td><td>130</td><td>Non-English specification</td><td></td></tr> <tr><td>147</td><td>2,520</td><td>147</td><td>2,520</td><td>For filing a request for reexamination</td><td></td></tr> <tr><td>112</td><td>920*</td><td>112</td><td>920*</td><td>Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>113</td><td>1,840*</td><td>113</td><td>1,840*</td><td>Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>115</td><td>110</td><td>215</td><td>55</td><td>Extension for reply within first month</td><td></td></tr> <tr><td>116</td><td>400</td><td>216</td><td>200</td><td>Extension for reply within second month</td><td></td></tr> <tr><td>117</td><td>920</td><td>217</td><td>460</td><td>Extension for reply within third month</td><td></td></tr> <tr><td>118</td><td>1,440</td><td>218</td><td>720</td><td>Extension for reply within fourth month</td><td></td></tr> <tr><td>128</td><td>1,950</td><td>228</td><td>980</td><td>Extension for reply within fifth month</td><td></td></tr> <tr><td>119</td><td>320</td><td>219</td><td>160</td><td>Notice of Appeal</td><td></td></tr> <tr><td>120</td><td>320</td><td>220</td><td>160</td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121</td><td>280</td><td>221</td><td>140</td><td>Request for oral hearing</td><td></td></tr> <tr><td>138</td><td>1,510</td><td>138</td><td>1,510</td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140</td><td>110</td><td>240</td><td>55</td><td>Petition to revive - unavoidable</td><td></td></tr> <tr><td>141</td><td>1,280</td><td>241</td><td>640</td><td>Petition to revive - unintentional</td><td></td></tr> <tr><td>142</td><td>1,280</td><td>242</td><td>640</td><td>Utility issue fee (or reissue)</td><td></td></tr> <tr><td>143</td><td>480</td><td>243</td><td>230</td><td>Design issue fee</td><td></td></tr> <tr><td>144</td><td>620</td><td>244</td><td>310</td><td>Plant issue fee</td><td></td></tr> <tr><td>122</td><td>130</td><td>122</td><td>130</td><td>Petitions to the Commissioner</td><td></td></tr> <tr><td>123</td><td>50</td><td>123</td><td>50</td><td>Processing fee under 37 CFR 1.17 (a)</td><td></td></tr> <tr><td>126</td><td>180</td><td>126</td><td>180</td><td>Submission of Information Disclosure Sheet</td><td></td></tr> <tr><td>581</td><td>40</td><td>581</td><td>40</td><td>Recording each patent assignment per property (times number of properties)</td><td></td></tr> <tr><td>148</td><td>740</td><td>245</td><td>370</td><td>Filing a submission after final rejection (37 CFR § 1.129(a))</td><td></td></tr> <tr><td>149</td><td>740</td><td>249</td><td>370</td><td>For each additional invention to be examined (37 CFR § 1.129(b))</td><td></td></tr> <tr><td>179</td><td>740</td><td>278</td><td>370</td><td>Request for Continued Examination (RCE)</td><td></td></tr> <tr><td>189</td><td>900</td><td>189</td><td>900</td><td>Request for expedited examination of a design application</td><td></td></tr> </tbody> </table> <p>Other fee (specify) _____</p> <p>*Reduced by Basic Filing Fee Paid</p>		Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid	105	130	205	65	Surcharge - late filing fee or oath		127	50	227	25	Surcharge - late provisional filing fee or cover sheet		139	130	139	130	Non-English specification		147	2,520	147	2,520	For filing a request for reexamination		112	920*	112	920*	Requesting publication of SIR prior to Examiner action		113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action		115	110	215	55	Extension for reply within first month		116	400	216	200	Extension for reply within second month		117	920	217	460	Extension for reply within third month		118	1,440	218	720	Extension for reply within fourth month		128	1,950	228	980	Extension for reply within fifth month		119	320	219	160	Notice of Appeal		120	320	220	160	Filing a brief in support of an appeal		121	280	221	140	Request for oral hearing		138	1,510	138	1,510	Petition to institute a public use proceeding		140	110	240	55	Petition to revive - unavoidable		141	1,280	241	640	Petition to revive - unintentional		142	1,280	242	640	Utility issue fee (or reissue)		143	480	243	230	Design issue fee		144	620	244	310	Plant issue fee		122	130	122	130	Petitions to the Commissioner		123	50	123	50	Processing fee under 37 CFR 1.17 (a)		126	180	126	180	Submission of Information Disclosure Sheet		581	40	581	40	Recording each patent assignment per property (times number of properties)		148	740	245	370	Filing a submission after final rejection (37 CFR § 1.129(a))		149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))		179	740	278	370	Request for Continued Examination (RCE)		189	900	189	900	Request for expedited examination of a design application	
Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid																																																																																																																																																																												
105	130	205	65	Surcharge - late filing fee or oath																																																																																																																																																																													
127	50	227	25	Surcharge - late provisional filing fee or cover sheet																																																																																																																																																																													
139	130	139	130	Non-English specification																																																																																																																																																																													
147	2,520	147	2,520	For filing a request for reexamination																																																																																																																																																																													
112	920*	112	920*	Requesting publication of SIR prior to Examiner action																																																																																																																																																																													
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action																																																																																																																																																																													
115	110	215	55	Extension for reply within first month																																																																																																																																																																													
116	400	216	200	Extension for reply within second month																																																																																																																																																																													
117	920	217	460	Extension for reply within third month																																																																																																																																																																													
118	1,440	218	720	Extension for reply within fourth month																																																																																																																																																																													
128	1,950	228	980	Extension for reply within fifth month																																																																																																																																																																													
119	320	219	160	Notice of Appeal																																																																																																																																																																													
120	320	220	160	Filing a brief in support of an appeal																																																																																																																																																																													
121	280	221	140	Request for oral hearing																																																																																																																																																																													
138	1,510	138	1,510	Petition to institute a public use proceeding																																																																																																																																																																													
140	110	240	55	Petition to revive - unavoidable																																																																																																																																																																													
141	1,280	241	640	Petition to revive - unintentional																																																																																																																																																																													
142	1,280	242	640	Utility issue fee (or reissue)																																																																																																																																																																													
143	480	243	230	Design issue fee																																																																																																																																																																													
144	620	244	310	Plant issue fee																																																																																																																																																																													
122	130	122	130	Petitions to the Commissioner																																																																																																																																																																													
123	50	123	50	Processing fee under 37 CFR 1.17 (a)																																																																																																																																																																													
126	180	126	180	Submission of Information Disclosure Sheet																																																																																																																																																																													
581	40	581	40	Recording each patent assignment per property (times number of properties)																																																																																																																																																																													
148	740	245	370	Filing a submission after final rejection (37 CFR § 1.129(a))																																																																																																																																																																													
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))																																																																																																																																																																													
179	740	278	370	Request for Continued Examination (RCE)																																																																																																																																																																													
189	900	189	900	Request for expedited examination of a design application																																																																																																																																																																													
<p>1. BASIC FILING FEE</p> <table border="1"> <thead> <tr> <th>Large Entity Fee Code</th> <th>Large Entity Fee (\$)</th> <th>Small Entity Fee Code</th> <th>Small Entity Fee (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>101</td><td>740</td><td>201</td><td>370</td><td>Utility filing fee</td><td></td></tr> <tr><td>106</td><td>330</td><td>206</td><td>165</td><td>Design filing fee</td><td></td></tr> <tr><td>107</td><td>510</td><td>207</td><td>255</td><td>Plant filing fee</td><td></td></tr> <tr><td>108</td><td>740</td><td>208</td><td>370</td><td>Reissue filing fee</td><td></td></tr> <tr><td>114</td><td>180</td><td>214</td><td>80</td><td>Provisional filing fee</td><td></td></tr> </tbody> </table> <p>SUBTOTAL (1) (\$) 0</p>		Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid	101	740	201	370	Utility filing fee		106	330	206	165	Design filing fee		107	510	207	255	Plant filing fee		108	740	208	370	Reissue filing fee		114	180	214	80	Provisional filing fee		<p>2. EXTRA CLAIM FEES</p> <table border="1"> <thead> <tr> <th>Total Claims</th> <th>Extra Claims</th> <th>Fee from below</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>20**</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>3**</td><td>0</td><td>0</td><td>0</td></tr> <tr><td></td><td></td><td></td><td>0</td></tr> </tbody> </table> <p>Multiple Dependent</p> <table border="1"> <thead> <tr> <th>Large Entity Fee Code</th> <th>Large Entity Fee (\$)</th> <th>Small Entity Fee Code</th> <th>Small Entity Fee (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>103</td><td>18</td><td>203</td><td>9</td><td>Claims in excess of 20</td><td></td></tr> <tr><td>102</td><td>84</td><td>202</td><td>42</td><td>Independent claims in excess of 3</td><td></td></tr> <tr><td>104</td><td>280</td><td>204</td><td>140</td><td>Multiple dependent claim, if not paid</td><td></td></tr> <tr><td>109</td><td>84</td><td>209</td><td>42</td><td>** Reissue independent claims over original patent</td><td></td></tr> <tr><td>110</td><td>18</td><td>210</td><td>9</td><td>** Reissue claims in excess of 20 and over original patent</td><td></td></tr> </tbody> </table> <p>SUBTOTAL (2) (\$) 0</p>		Total Claims	Extra Claims	Fee from below	Fee Paid	20**	0	0	0	3**	0	0	0				0	Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid	103	18	203	9	Claims in excess of 20		102	84	202	42	Independent claims in excess of 3		104	280	204	140	Multiple dependent claim, if not paid		109	84	209	42	** Reissue independent claims over original patent		110	18	210	9	** Reissue claims in excess of 20 and over original patent																																																																																							
Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid																																																																																																																																																																												
101	740	201	370	Utility filing fee																																																																																																																																																																													
106	330	206	165	Design filing fee																																																																																																																																																																													
107	510	207	255	Plant filing fee																																																																																																																																																																													
108	740	208	370	Reissue filing fee																																																																																																																																																																													
114	180	214	80	Provisional filing fee																																																																																																																																																																													
Total Claims	Extra Claims	Fee from below	Fee Paid																																																																																																																																																																														
20**	0	0	0																																																																																																																																																																														
3**	0	0	0																																																																																																																																																																														
			0																																																																																																																																																																														
Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid																																																																																																																																																																												
103	18	203	9	Claims in excess of 20																																																																																																																																																																													
102	84	202	42	Independent claims in excess of 3																																																																																																																																																																													
104	280	204	140	Multiple dependent claim, if not paid																																																																																																																																																																													
109	84	209	42	** Reissue independent claims over original patent																																																																																																																																																																													
110	18	210	9	** Reissue claims in excess of 20 and over original patent																																																																																																																																																																													

**or number previously paid, if greater; For Reissues, see above

SUBMITTED BY		Complete (if applicable)	
Name (Print/Type)	Patricia A. Verlangieri	Registration No. Attorney/Agent	42,201
Signature	<i>Patricia A. Verlangieri</i>	Telephone	(732) 530-8404
		Date	February 5, 2003

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

TELEFAX COVER SHEET

MOSER, PATTERSON & SHERIDAN, L~~E~~A~~X~~ RECEIVED

ATTORNEYS AT LAW
595 SHREWSBURY AVENUE
FIRST FLOOR
SHREWSBURY, NJ 07702
TELEPHONE (732) 530-9404
TELEFAX (732) 530-9808

FEB 05 2003

TECHNOLOGY CENTER 2800

THIS TELEFAX MESSAGE IS ADDRESSED TO THE PERSON OR COMPANY LISTED BELOW. IF IT WAS SENT OR RECEIVED INCORRECTLY, OR YOU ARE NOT THE INTENDED RECIPIENT, PLEASE TAKE NOTICE THAT THIS MESSAGE MAY CONTAIN PRIVILEGED OR CONFIDENTIAL MATERIAL, AND YOUR DUE REGARD FOR THIS INFORMATION IS NECESSARY. YOU MAY ARRANGE TO RETURN THIS MATERIAL BY CALLING THE FIRM LISTED ABOVE AT (732) 530-9404

THIS MESSAGE HAS 12 PAGES INCLUDING THIS SHEET

TO: Commissioner for Patents

FAX NO.: 703-872-9318

FROM: Patricia A. Verlangieri, Esq.

DATE: February 5, 2003

MATTER: Serial No. 10/092,795 Filed: March 6, 2002

DOCKET NO.: 7017/ETCH/CONE

APPLICANT: Nallan, et al.

The following has been received in the U.S. Patent and Trademark Office on the date of this facsimile:

☐ Petition
☐ Disclosure Statement & PTO-1449
☐ Priority Document
☐ Drawings (sheets) informal
☒ Response and Amendment (7 pages)

☒ Transmittal Letter (2 copies)
☒ Fee Transmittal (2 copies)
☐ Deposit Account Transaction
☒ Facsimile Transmission Certificate dated February 5, 2003

CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. §1.8

I hereby certify that this correspondence is being transmitted by facsimile to the Commissioner for Patents, Box Non-Fee Amendment, Washington, DC 20231 on February 5, 2003, Facsimile No. (703) 872-9318.

Allyson M. DeVesty
Name of person signing this certificate

Allyson M. DeVesty 2-5-03
Signature and date